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ABSTRACT

The increase in studies of the interaction of readers' prior knowledge systems with language cues in print has been a significant trend in reading research. Current research questions reflect the belief that the prior knowledge systems of readers are a principal determinant of what a reader can learn and remember from text. Cognitive style research and reading research unite in examining individual differences in language processing; the question is "how" readers bring prior knowledge to bear on text, rather than "what" knowledge in particular is used. Research has found that field-dependent and field-independent individuals differ not only in information processing, but in such activities as dreaming, using defense mechanisms, social interaction, and decision making. Recent research has also investigated the failure to comprehend multiple-meaning words, the conceptual tempo dimension, the preferability of the reflective or impulsive style as depending on the sort of task at hand, and bias in the extent to which one utilizes knowledge schemata as a source of style difference in processing. (DF)

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# THE IMPORTANCE OF COGNITIVE STYLES RESEARCH FOR UNDERSTANDING READING PROCESS

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I am going to address the issues of the symposium from the perspective of a reading researcher. I'll begin by sharing with you my perceptions of what I think we--as reading researchers--treat as tentative truths about reading process in 1979. Then, I'll speculate briefly about how cognitive style research interests and reading research interests might mesh.

Reading process first. I am convinced that aside from the major shift in reading investigations from pedagogy to process in the last decade, the most significant reading research trend has been the dramatic increase in studies of the interaction of prior knowledge systems of readers with language cues in print. Whether we talk about this interaction as Frank Smith (1978) does as a reciprocal relationship between visual and nonvisual information or as John Bransford and his colleagues (1972) do for listeners and readers as a use of linguistic inputs to recreate and modify stored "knowledge of the world" or as Rumelhart and Ortony (1977) and others do as a combination of top-down bottom-up processing of ideas in print, we acknowledge now that the process cannot be described in a theoretically acceptable, empirically useful way by focusing on language bits apart from readers. In this new view, meaning--the goal, the whole point of reading--is

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not "out there," is not fixed, is not susceptible to easy measurement. Readers carry meanings. Text pages carry cues which readers use to access and to adjust meanings.

I do not see the change in research from the language-contained interpretation-of-ideas view to the present construction-of-ideas view that breaks the bounds of language to be a small one. It certainly has changed the nature of our research questions. Recently, reading and language researchers have asked questions such as these:

- Is text information that doesn't appear to fit into slots of relevant prior knowledge structures (or "schemata") perceived by language users as insignificant?
  Anderson and Pichert (1977, 1978) suggest a "yes" is in order.
- Do adult listeners or readers use linguistic context and knowledge of objects and events to reduce the meaning alternatives only implicitly available in input?
  The Barclay, Bransford, Franks, McCarrell, and Nitsch work (1974) suggests this is so.
- Do young readers generate rich, detailed mental representations for input material; do readers "instantiate?"
  Anderson, Stevens, Shifrin, and Osborn (1978) findings provide a tentative "yes".

These research questions are but a small sample of current questions being posed by language and reading researchers. They reflect at least as great an interest in information off the page, as in information on the page. They reflect, I think, the belief that prior knowledge systems of readers--to lift from Anderson, Spiro, and Anderson (1978) --are a principal determiner of what a reader can learn and remember from text.

When we move--as I've suggested reading researchers have--off the page, when we look closely at readers carrying meanings, we enter an enormously intriguing, but difficult, area to research. We attempt to devise tasks that tap all relevant prior knowledge of readers--a messy endeavor. We try to separate our sense of what readers know from what they can tell us about what they know--a potentially critical confounding problem. And we acknowledge the shakiness of our representations of what readers know--for acquired, abstracted, adjusted meanings are ever in flux; we require that they stand still for systematic analysis, but the static form of the resulting picture is imposed. In this whole off-the-page area of inquiry we also have come to expect idiosyncracy among readers, for knowledge of objects and events is derived from personal experiences which certainly vary from individual to individual.

It is precisely at this point that I want to turn to the matter of the possible meshing of cognitive style and reading research interests. Refraining temporarily from specific definitions of style, I suggest that the new reading research emphasis on individual prior knowledge systems nudges us toward an interest in individual differences in language processing. Just as more traditional research programs have given us evidence that we dare not equate beginning reader and accomplished reader styles and strategies or poor reader and good reader styles and strategies, the current body of inquiry at least implies at this point that we cannot assume one fluent reader processing style. Given X number of readers attempting to understand the ideas in a piece of text, X number of systems of prior knowledge are inter-

acting with cues in print. Despite a large store of shared information within a culture, these systems are very unlikely to be exactly alike. Furthermore, the means by which these systems are brought to bear on the text processing task are also very unlikely to be exactly alike. In other words, readers differ in what they know and readers differ in the manner in which they use what they know as they read. Some disabled readers--readers I've labelled "print-bound" elsewhere (Garner, in press)--do not seem to be even minimally aware that they can use what they already know as they read new text material.

Wittrock (1979) defines cognitive styles as the "stable ways people differ in perception, encoding, and storage of information" (p. 7). At that level of generality, it seems clear to me that investigation of such styles might speak to current reading concerns. We might study how reader A brings prior knowledge to bear on text Z versus how reader B brings prior knowledge to bear on text Z. What information is brought to bear on text processing tasks would at this point be of much less importance.

At a more specific level--looking at the much described and researched particular dimensions of style--I want to first comment very sketchily on ways in which the style work might speak to reading concerns, and then I'd like to spend a few minutes focusing on Rand Spiro's really interesting recent work (1978, 1979) that attempts to mesh cognitive style and reading research.

In terms of the field-dependence/field-independence dimension, the very stability and pervasiveness of the style differences not attributable to intelligence tests that have been found here suggest that

perhaps reading people too should look at this variable. The Witkin research group (e.g., 1977) has documented powerful differences between very field-dependent individuals and very field-independent individuals--not only in information processing, but in dreaming, in using defense mechanisms, in interacting socially, and in making career decisions. Furthermore, logical analysis of what responses are required for successful dissection of a complex figure in an Embedded-Figure Test task might convince us that analogous responses are required in reading tasks.

One possible example: Bransford, Nitsch, and Franks (1977) refer to a phenomenon they label "decontextualizaton"--a process by which information becomes less clearly tied to the context in which it was derived or enriched, a process of losing some of the idiosyncratic baggage still carried from initial extralinguistic encounters with objects and events. Witkin, et al. (1977) report problem-solving research where successful completion of a task required using an implement in both its primary role and in a very unique role--the latter requiring "decontextualization" of a sort.

Two language examples seem analogous. Mason, Knisely, and Kendall (1978) talk about comprehension failure with multiple-meaning words; primary or very common meanings, it seems, are accessed by young readers even when secondary or unusual meanings are sometimes clearly dictated by the differing linguistic settings. And then, Barclay, Bransford, Franks, McCarrell, and Nitsch (1974) want to talk about implicit attribute emphasis for relatively unambiguous nouns. They want to point out that language users need to attend to weight when hearing the sentence "The man lifted the piano," but to

sound when hearing the sentence "The man tuned the piano." Equivalent mental representations for these inputs would not be anticipated. We might well speculate that very field-dependent individuals would have trouble "shifting gears" in these language settings. They might access only primary meanings and might focus on only a small subset of attributes--failing to analyze the meaning impact. Perhaps a look at relationships between performance on those language tasks and on something like the EFT task is in order.

In terms of the conceptual tempo dimension, again, logical analysis of what responses (slow, accurate) are required for a reflective pattern label in a Matching Familiar Figures Test task might convince us that analogous responses are required in reading tasks. Attention to distinctive features of tasks (Tyler, 1974), an inclination to perceive and categorize information systematically (Sigel and Coop, 1974) are usually included as components in descriptions of the reflective style.

The MFFT task brings to mind the potentially analogous task of reading heavily detailed, sequenced information such as recipes, science experiments, model assembly instructions, or directions for playing a game. In processing material of this sort, readers need to capitalize on the relative permanence of print (vis a vis utterances) and to continuously re-examine the information for detail. If action (baking a cake, assembling a model airplane) is to be taken, successful performance will be dependent upon readers' attention to ordered details.

This sort of reading material is not the only sort available to readers, however. Sometimes readers confront recreational reading or telephone book use or TV Guide selections. In those instances and in others, I cannot imagine that slow, cautious reading and rereading is to be advocated. Smith (1978) worries in many instances that a reader who is fearful of making errors might attend nearly equally to every letter or every word and might fail to get information at a rate sufficient for it to make sense in such material.

The Rollins and Genser (1977) point seems important in this regard: the superiority of the reflective or impulsive style depends a great deal on the task at hand; if a problem has a small number of potential solutions, for instance, the systematic reflective approach is preferable, but if a problem has a large number of potential solutions, the impulsive approach (involving selection of the most likely of the choices) might be preferable. In urging flexible styles on this dimension, Rollins and Genser provide the examples of adults looking for lost objects in likely places prior to any thorough search of all possible places and of scientists testing the validity of more likely explanations of a phenomenon rather than testing all possible explanations--both examples of appropriate use of the impulsive approach. Their work suggests that any future work on MFFT type instrument performance relationship to reading performance needs to consider the task factor very carefully.

I'd like to conclude my remarks on the meshing of cognitive style research efforts and reading research efforts by looking briefly at the questions Rand Spiro (1978, 1979) is posing in his current

research program. Spiro is interested in the current interactive model of discourse processing and specifically in one source of style differences in processing--one related to biases "in the extent to which one utilizes knowledge schemata" (1979, p.3). A current study has provided strong support for the hypothesis that high scorers on the EFT would demonstrate greater use of prior knowledge in the familiar Anderson, Spiro, and Anderson (1978) fine restaurant-supermarket processing task.

Spiro discusses these findings as supporting the somewhat analogous character of the EFT and discourse processing tasks. Successful performance on the EFT task requires overcoming a "stimulus-bound" stance, and successful performance on the processing task requires overcoming a "text-bound" stance. Prior knowledge--a memory of a target structure or an access of pre-existing schemata--must be brought to bear on the material at hand for successful performance to result.

These points seem to me to be important. We have substantial support for the current view that reading is the interaction of prior knowledge systems of readers with language cues in print. We see readers whose processing is tilted in a text-bound, bottom-up direction. We might speculate about why this is so. Clearly, meager prior knowledge systems might be one potential factor. Instructional de-emphasis on the role of reader schemata might be another. What of a cognitive style that directs some readers toward a general "stimulus-bound" approach? Spiro's work suggests that this is another potent variable. As we continue to direct our reading research to

explore off-the-page factors related to processing, it seems to me that it might just be that the body of cognitive style inquiry might prove to be a source of some of those factors.

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